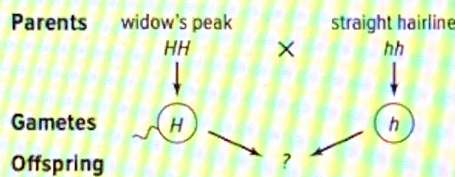


Check Your Understanding of Topic 1.2

CP Questioning and Predicting
 PC Planning and Conducting
 PA Processing and Analyzing
 E Evaluating
AI Applying and Innovating
 C Communicating

Understanding Key Ideas

1. Explain how Mendel used selective breeding to learn more about heredity. **C**
2. In terms of experimental design, why was it important that Mendel used true-breeding plants to explore patterns of inheritance? **PA**
3. Explain the differences between the following sets of terms and give an example of each term: **PA C**
 - a) dominant and recessive
 - b) genotype and phenotype
 - c) homozygous and heterozygous
4. The diagram below represents the genotypes of two parents and one gamete from each parent. **AI C**



- a) What is the genotype of the offspring?
 - b) What is the phenotype of the offspring? Explain your reasoning.
5. Suppose that two siblings both have attached earlobes, and their parents have unattached earlobes. Unattached earlobes are represented as E , and attached earlobes are represented by e . What are the genotypes of the parents? Explain your reasoning. **AI C**
 6. Copy the Punnett square into your notebook. The ability of a person to roll his or her tongue is dominant (T), and the inability is recessive (t). Fill in the blank genotypes and describe the phenotypes for each. **AI C**

	T	t
t	Tt	
t	Tt	

7. In pigeons, the checker pattern of feathers (F) is dominant to the non-checker pattern (f). Suppose a checkered pigeon with the genotype Ff mates with a non-checkered pigeon. Draw a Punnett square to predict the genotypes of their offspring. **CP**
8. A white-flowered plant is crossed with a red-flowered plant. What is the likely mode of inheritance if the offspring produced are **PA**
 - a) plants with pink flowers?
 - b) plants with red flowers?
9. How does sex-linked inheritance occur? **C**

Connecting Ideas

10. The Punnett square shows the genotype of the female parent and the genotypes of the offspring. **AI**

	?	?
X^b	X^bX^b	X^bY
X^b	X^bX^b	X^bY

X^B = Normal

X^b = Red-green colour vision deficiency

Y = Y chromosome

- a) What is the genotype of the male parent?
- b) What is the phenotype of the male parent?

Making New Connections

11. Sometimes breeders of plants and animals need to know if a plant or animal that has a dominant phenotype has a genotype that is homozygous dominant or heterozygous. One way to determine this is by doing a test cross. A test cross involves
 - mating the individual of unknown genotype with an individual who is homozygous recessive for the trait
 - analyzing the phenotypes of the offspring.
 Explain how this helps breeders identify the unknown genotype. Use a Punnett square to work through possible crosses. **AI C**